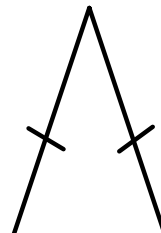
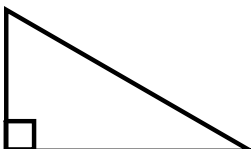
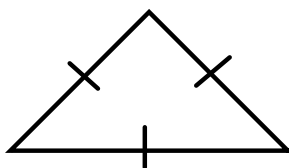


2.4 Classifying Geometric Figures:

Brainstorm your answers to the following.

1. Given the coordinates of 3 points, how would you determine:
 - a. what type of triangle you have? (equilateral, isosceles, or scalene)
 - b. if it is a right triangle?



Brainstorm your answers to the following.

2. Given the coordinates of 4 points, what is sufficient information to determine if the object is a:

- a. parallelogram?
 - | opposite sides are parallel and congruent
 - | diagonals bisect each other (same midpoint)
 - | opposite angles are congruent

- b. rectangle? *distance*
slope m_⊥

- c. rhombus? *distance All side =*
Slopes

- d. square? *distance all side =*
slope m_⊥

$$y = 2x + 1$$

$$m_{\perp} = -\frac{1}{2}$$

Properties of Quadrilaterals



congruent symbol - same shape and size

Property	Both pair of opp. sides are	Exactly one pair of opp. sides are	Both pair of opp. sides are ≅	Exactly one pair of opp. sides are ≅	All sides are ≅	Four right angles	Diagonals are ≅	Diagonals are ⊥	Diagonals bisect each other	Two pair of adjacent sides are ≅
Parallelogram	X		X						X	
Rhombus	X		X		X			X	X	
Rectangle	X		X			X	X		X	
Square	X		X		X	X	X	X	X	
Kite								X		X
Trapezoid		X								
Isosceles Trapezoid		X		X						

Classifying Geometric Figures

We are going to analyze some geometric theorems.
To do this, we will use the following tools:

- slopes of parallel & perpendicular lines
- distance formula
- midpoint formula

NOTE:

When solving a problem involving a geometric figure, it is a good idea to start by drawing a diagram on a coordinate grid.

Ex.1. A triangle has vertices at P(-2, 2), Q(-1, -3), and R(4, 1).

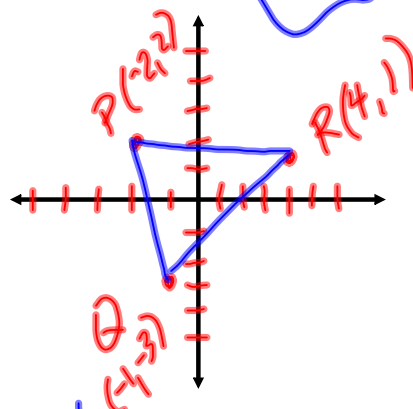
a) Show that this is NOT a right triangle.

$$m_{PQ} = \frac{-3 - (2)}{-1 - (-2)} = \frac{-5}{1} = -5$$

$$m_{PR} = \frac{1 - (2)}{4 - (-2)} = \frac{-1}{6}$$

$$m_{QR} = \frac{-3 - (1)}{-1 - (4)} = \frac{-4}{-5} = \frac{4}{5}$$

\therefore slope are not m_{\perp} , its not a right triangle



Ex.1. A triangle has vertices at P(-2, 2), Q(-1, -3), and R(4, 1).

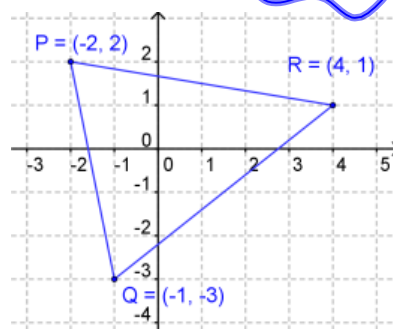
b) Show that the triangle is scalene.

$$d_{PQ} = \sqrt{(-1 - (-2))^2 + (-3 - (2))^2} = \sqrt{(1)^2 + (-5)^2} = \sqrt{26}$$

$$d_{PR} = \sqrt{(4 - (-2))^2 + (1 - (2))^2} = \sqrt{(6)^2 + (-1)^2} = \sqrt{37}$$

\therefore all side are different, its scalene

$$d_{QR} = \sqrt{(4 - (-1))^2 + (1 - (-3))^2} = \sqrt{(5)^2 + (4)^2} = \sqrt{41}$$



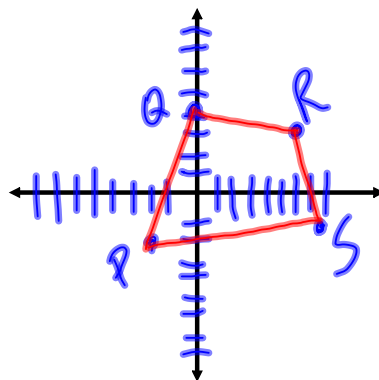
Ex.2. Determine the type of quadrilateral described by the points P(-2, -2), Q(0, 4), R(6, 3), and S(8, -1).

$$m_{QR} = \frac{4 - (-2)}{0 - 6} = -\frac{1}{6}$$

$$m_{PQ} = \frac{4 - (-2)}{0 - (-2)} = \frac{6}{2} = 3$$

$$m_{PS} = \frac{-1 - (-2)}{8 - (-2)} = \frac{1}{10}$$

$$m_{RS} = \frac{3 - (-1)}{6 - 8} = \frac{4}{-2} = -2$$



Since all slopes are different it's a
irregular Quadrilateral

Assigned Work: p.101-103 # 2, 5, 6b, 7, 8, 11, 12, 16d